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$$\frac{d\rho}{d\theta}=\pm\frac{a\rho}{\sqrt{(b^2-a^2)}},\text{ or }\kappa\rho=e^{\pm[a/\sqrt{(b^2-a^2)}]\theta}.$$

The cylinder has therefore for its right section a logarithmic spiral or rather two arranged in opposite directions.

3. This curious result may be stated in the following way. If an elliptical hole be cut out of a sheet of paper and the sheet wrapped about a sphere the diameter of which equals the minor axis of the ellipse the sheet wraps up into a cylinder a cross section of which is a logarithmic spiral. A model illustrating this relation between the ellipse and the spiral is easily constructed.

BERKELEY, *April, 1904.*

DEPARTMENTS.

SOLUTIONS OF PROBLEMS.

ALGEBRA.

200. Proposed by F. P. MATZ, Sc. D., Ph. D., Professor of Mathematics and Astronomy in Defiance College, Defiance, O.

No matter what value x be given, the *numerical* value of the expression $(x+2)/(2x^2+3x+6)$ can never exceed $\frac{1}{3}$.

II. Solution by G. W. GREENWOOD, M.A., Professor of Mathematics and Astronomy in McKendree College, Lebanon, Ill.

We know that $y+1/y\nless 2$.

$\therefore z/2+2/z\nless 2$. $2z+8/z\nless 8$. $2z+8/z-5\nless 3$. $\dfrac{2z^2-5z+8}{z}\nless 3$.

Now put $z=x+2$ and we get

$$\frac{2x^2+3x+6}{x+2}\nless 3;\ i.\,e.,\ \frac{x+2}{2x^2+3x+6}\ngtr\tfrac{1}{3}.$$

202. Proposed by G. B. M. ZERR, A. M., Ph. D., Parsons, W. Va.

Express in the form of radicals the roots of the equation

$$x^9+9mx^7+27m^2x^5+30m^3x^3+9mx+2r=0.$$

I. Solution by A. H. HOLMES, Brunswick, Maine.

Writing $x^3+3mx=y$ the equation becomes

$$y^3+3m^3y+2r=0\text{..........}(1).$$